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Metastatic Papillary Thyroid Carcinoma to the Nasal Cavity: When Niftp is Not Indolent

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ABSTRACT

Background: Papillary thyroid carcinoma (PTC) is a well-differentiated malignancy with a favorable prognosis and rare distant metastases. The nasal cavity is an exceptionally uncommon site of metastasis. Non- Invasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP) is considered a low- risk thyroid lesion, and metastasis from such a lesion is exceedingly rare.

Case Presentation: We report a case of a 58-year-old woman who presented with unilateral persistent epistaxis and anosmia, three years after undergoing thyroidectomy for a lesion diagnosed as NIFTP. Imaging revealed a hypervascular mass in the right nasal cavity with extension to the orbit and skull base. Biopsy and immunohistochemistry confirmed a metastatic papillary thyroid carcinoma. The patient underwent complete surgical excision via a combined endonasal and Rouge-Denker approach, followed by adjuvant radioactive iodine therapy. The postoperative course was uneventful.

Discussion: This case highlights a rare metastatic presentation of PTC initially misclassified as NIFTP. The unusual site, delayed onset, and normal serum thyroglobulin levels contributed to the diagnostic challenge. It underscores the importance of accurate histopathological evaluation and vigilance in long-term follow-up.

Conclusion: Sinonasal metastasis from PTC is extremely rare and can mimic primary nasal tumors. This case emphasizes the potential for misdiagnosis of NIFTP and the need for thorough pathological assessment and long-term monitoring.

KEYWORDS: Papillary thyroid carcinoma; NIFTP; Nasal metastasis; Sinonasal tumor; Endoscopic surgery; Rouge- Denker approach; Radioactive iodine.

INTRODUCTION

Papillary thyroid carcinoma (PTC) is the most common differentiated thyroid cancer and typically carries an excellent prognosis [1]. Distant metastases are rare, occurring in 2–5% of cases, most often in the lungs and bones [2]. Metastases to the nasal cavity are extremely uncommon and may mimic primary sinonasal tumors [3–5].

Non-Invasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP) is a recently defined, indolent thyroid tumor with negligible metastatic potential [6]. However, rare exceptions and diagnostic misclassification have been reported [7,8].

We describe an unusual case of a nasal cavity metastasis from PTC, discovered three years after thyroidectomy for a lesion initially diagnosed as NIFTP. This case illustrates the diagnostic challenges and underscores the need for careful long-term follow-up.

CASE REPORT

We report a case of a 58-year-old female with a history of an indeterminate thyroid nodule diagnosed 3 years ago, for which she underwent a thyroidectomy, and after revised pathological examination, a NIFT-P was retained, and no postoperative radioactive iodine was needed. 3 years later, the patient presented with a persistent unilateral epistaxis and anosmia. The nasal endoscopy showed a tissular mass occupying the middle meatus with uneven limits, no ocular signs were noted the neurological examination was normal.

Thyroglobulin was normal. The CT scan and magnetic resonance imaging (MRI) showed a voluminous and suspicious-appearing tumor process, measuring 40 × 45 × 26 mm, located in the right nasal cavity. The lesion is hypervascularized and demonstrates significant loco-regional extension, particularly toward the ipsilateral orbit and the skull base, with direct contact with the cerebral parenchyma at the base of the frontal lobe (Fig 1,2 and 3). A PET scan was also performed, revealing a metabolically active tissue

process occupying the right nasal cavity, choana, and orbit, with superior infiltration of the ethmoidal air cells and the skull base.

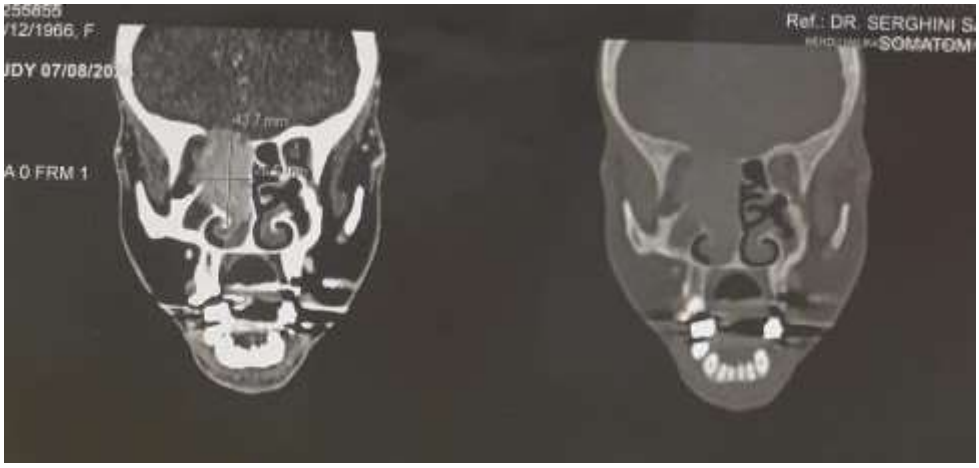

Figure 1: coronal CT scan demonstrating a tumoral lesion extending to the orbit and skull base

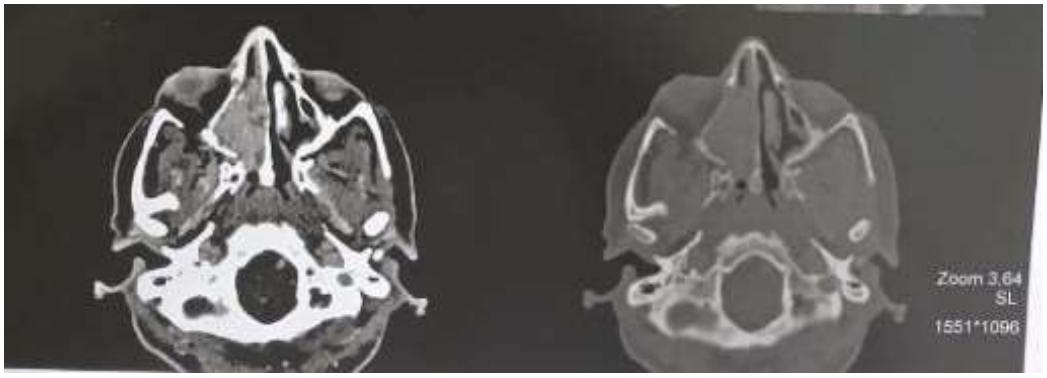

Figure 2: axial ct scan showing a mass lesion occupying the right nasal cavity

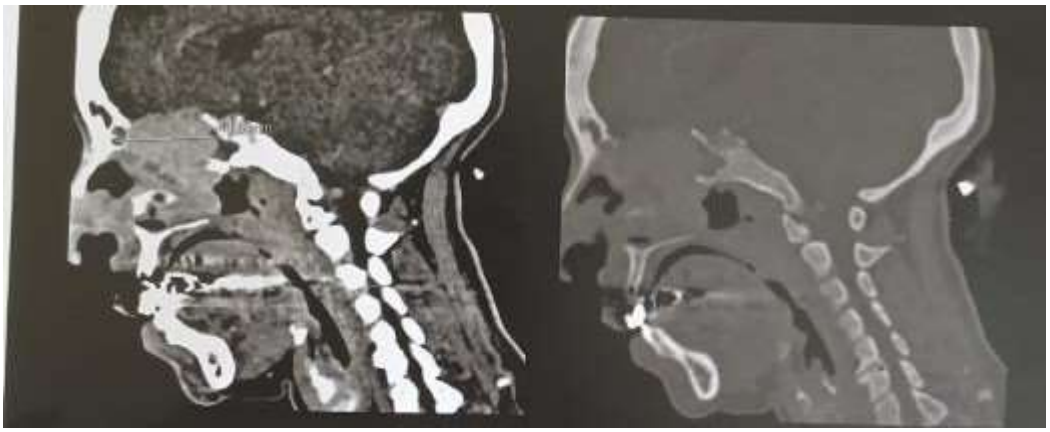

Figure 3: Sagittal section of CT scan demonstration the extent of the tumor

A biopsy was subsequently performed to establish the etiological diagnosis, revealing a nasal localization of a carcinomatous process. Immunohistochemical analysis suggested a thyroid origin.

Therapeutic management consisted of surgical excision via a combined approach: endoscopic endonasal and a vestibular transmaxillary route (Rouge-Denker approach), in order to achieve better surgical control of the tumor (Figure 4,5 and 6). The postoperative course was uneventful, with no reported complications. Following definitive histopathological examination confirming the diagnosis of a secondary localization of papillary thyroid carcinoma, the patient subsequently underwent radioiodine therapy.

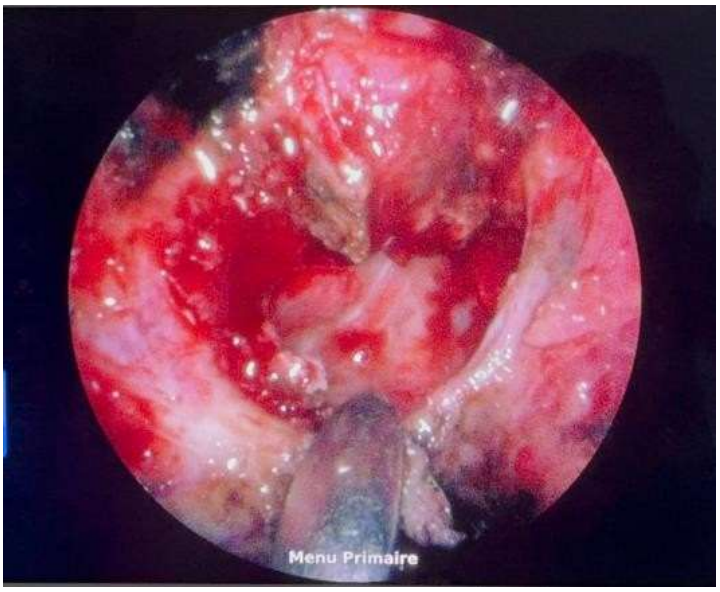

Figure 4: intraoperative image of the tumor via the endoscopic endonasal approach

Figure 5: intraoperative image of the Rouge Denker approach after placement of the nasal packing

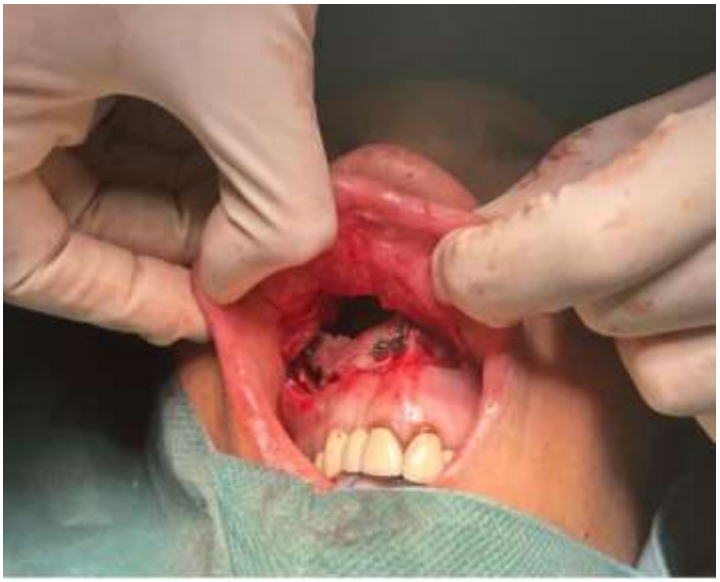

Figure 6: post operative image showing reconstruction of the anterior maxillary wall using tow mini plates

DISCUSSION

Papillary thyroid carcinoma (PTC) is the most common type of differentiated thyroid cancer, accounting for over 80% of all thyroid malignancies. It typically follows an indolent course, with an excellent long-term prognosis and a 10-year survival rate exceeding 90% [1]. Distant metastases occur in only 2–5% of cases, most commonly affecting the lungs and bones, and less frequently, the brain [2,3]. Metastatic involvement of the nasal cavity is exceedingly rare. To date, only a few cases of nasal metastases from PTC have been reported in the literature [4,5].

The present case is particularly intriguing as the patient had initially undergone thyroidectomy for a nodule classified histologically as NIFTP (Non-Invasive Follicular Thyroid Neoplasm with Papillary-like nuclear features). NIFTP is a redefined diagnostic entity introduced to prevent overtreatment of encapsulated follicular variant PTCs that exhibit non-invasive behavior and indolent biology [6]. Strict pathological criteria must be met for a NIFTP diagnosis, including complete encapsulation, absence of capsular or vascular invasion, and the presence of papillary-like nuclear features without papillae or psammoma bodies.

However, diagnostic challenges remain, especially in retrospective cases or when sampling is insufficient. Misclassification of invasive encapsulated PTC as NIFTP has been reported, leading to underestimation of metastatic risk [7]. In this case, the appearance of a distant metastasis three years after initial surgery raises questions about whether the original lesion was truly a NIFTP or a misdiagnosed invasive carcinoma. Rare reports have documented aggressive behavior in tumors initially classified as NIFTP, though this remains extremely uncommon [8].

The patient presented with persistent unilateral epistaxis and anosmia—non-specific symptoms more commonly associated with primary sinonasal malignancies. Metastases to the nasal cavity are rare and typically originate from renal cell carcinoma, lung, breast, or gastrointestinal primaries [9,10]. Thyroid carcinoma is an exceptionally uncommon source of sinonasal metastasis. When they do occur, such metastases often mimic primary tumors both clinically and radiologically.

In this case, CT and MRI showed a hypervascular, infiltrative mass involving the nasal cavity, orbit, and skull base—findings that suggested an aggressive primary sinonasal tumor. PET-CT revealed a solitary hypermetabolic lesion, further supporting a neoplastic process. Definitive diagnosis was obtained via biopsy and immunohistochemistry, with strong positivity for thyroglobulin and TTF-1, confirming thyroid origin [11].

Interestingly, the patient's serum thyroglobulin was within normal limits, despite the presence of an active metastatic lesion. While thyroglobulin is a sensitive marker for recurrence in most cases of PTC, false negatives can occur, especially in the presence of anti-thyroglobulin antibodies or in cases with poorly functioning or encapsulated metastases [12]. Therefore, normal thyroglobulin levels should not preclude further evaluation when clinical suspicion is high.

The treatment strategy in this case involved complete surgical excision of the tumor through a combined endonasal endoscopic and vestibular transmaxillary (Rouge-Denker) approach. This combined approach allowed enhanced exposure and control of the tumor, particularly in anatomically complex regions such as the orbit and anterior skull base. The Rouge-Denker approach, traditionally used in maxillary tumors, has been successfully adapted for sinonasal malignancies with extensive lateral or anterior extension [13].

Postoperative histopathology confirmed metastatic PTC, and the patient subsequently received radioactive iodine (RAI) therapy, which remains a mainstay in the treatment of iodine-avid distant metastases from PTC [14]. Surgical resection followed by RAI provides the best chance of disease control in isolated metastases, particularly when complete resection is feasible.

This case underscores the importance of long-term surveillance in patients previously diagnosed with NIFTP, particularly in cases where diagnostic certainty is limited. While NIFTP is generally considered

benign, rare exceptions and misdiagnoses may occur. Clinicians should maintain a high index of suspicion when new or unexplained symptoms arise—even several years after surgery.

CONCLUSION

This report describes an exceptional case of a solitary nasal metastasis from papillary thyroid carcinoma in a patient initially diagnosed with NIFTP. The atypical presentation, normal serum thyroglobulin, and rare metastatic site all contributed to the diagnostic challenge. This case highlights the importance of meticulous histopathological review, the limitations of current biomarkers, and the need for multidisciplinary management. It also calls for vigilance in long-term follow-up, even in presumed low-risk thyroid neoplasms.

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